DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 5-24 and 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oosterling et al. (US 6,578,516).

3. Regarding claims 1, 5, 33 and 34, Oosterling et al. disclose a method for determining the quality of milk, the method comprising the steps of: examining a milk sample with a detector 1; applying an object recognition rule to the examined milk sample using a determination device (camera 6 and processing unit, see col. 3, lines 19-48), the object recognition rule comprising distinguishing the type and the nature of the contamination (col. 3, lines 36-41).

4. Oosterling et al. do not explicitly disclose the object recognition rule distinguishing between a particle and a non-particle, or between a mineral particle and a biological particle, even though Oosterling et al. do teach that the material deposited on the filter element in the detector may be identified (see Abstract). It would have been obvious to one of ordinary skill in the art, when using the method of Oosterling, to distinguish between what is and what is not a particle, including whether something is a bubble, a reflection object, or a defect object, and whether a particle is mineral or

biological. Since Oosterling already teaches identifying what the particle is, knowing these characteristics about the particle is obvious because it helps to determine whether there is contamination, what the source of the contamination is, and how serious it is.

5. Regarding claim 2, Oosterling et al. teach extracting particles from the milk sample using filter 9, and further teach using a controller to automatically control operation of the detection device (col. 1, lines 19-23).

6. Regarding claim 6, the camera 6 and window 3, are an identification device which indentify a portion of interest of the milk sample, namely by making that portion to be examined visible.

7. Regarding claim 7, the camera 6 optically detects the objects (particles) on the filter and therefore locates the particles in relation to the filter which includes the boundaries of the particles.

8. Regarding claims 8 and 9, Oosterling teaches optically capturing an object's visual image, which is a parameter of the object, when detecting the object (col. 3, lines 19-33).

9. Regarding claims 10-13, Oosterling teaches detecting objects on the filter 9 with camera 6 based on their difference in color from the filter material, which encompasses the object parameters of lightness, color, contrast, and outer contour (col. 2, lines 54-67).

10. Regarding claim 14, Oosterling does not explicitly teach using multiple object parameters to identify the particles in the filter 9, but does teach identifying the nature and type of particles in the filter. It would have been obvious to one of ordinary skill in

the art to use two or more parameters, such as color, size, and shape, to identify the particles, because the more parameters used the more accurate the identification would be.

11. Regarding claim 15, Oosterling does not specifically use the term the "fuzzy logic", however does teach that the observations of the particles and the filter are sent to the determination device (processing unit) and compared with certain limit values to establish the nature and type of contamination (col. 3, lines 34-41). Because the determination made is not a simple 'contaminated or not contaminated' determination, but rather one of degree and type, it would have been obvious to use fuzzy logic since this would allow the processing unit to make determinations based on different degrees of the parameters and therefore determine different degrees of contamination.

12. Regarding claim 17, Oosterling teaches using the determination device (processing unit) to compare the object values with certain limit values, and therefore determines a characteristic value of the particles in the filter (col. 3, lines 34-41).

13. Regarding claim 18, Oosterling teaches using incident light to detect parameters of the objects in the filter (col. 3, lines 19-33).

14. Regarding claim 19, Oosterling teaches determining milk quality based on the object type (type/nature of contaminants in filter) using the determination device (processing unit); and selectively routing the milk to different tanks based on quality, including discarding (putting in a tank containing waste milk) the milk of poor quality (col. 2, lines 24-39). Oosterling does not specifically disclose that the acceptable milk as routed to a “marketable container”. However, it would have been obvious to one of

ordinary skill in the art to route the milk, at least eventually, to a marketable container, because milk that is being produced in high volumes is likely being produced for commercial purposes, and placing milk in a marketable container is the best way to sell it. Furthermore, the tanks to which Oosterling does disclose the milk being routed to, could be considered marketable containers since the milk can be sold or commercially distributed in this form.

15. Regarding claim 20, Oosterling teaches routing the milk to a measuring chamber 15 using a controller (col. 1, lines 19-23); draining the milk through the filter 9 from the measuring chamber; and wherein examining the milk comprises capturing an image of the filter, which is a part of the measuring chamber surface, with a camera 6 (col. 3, lines 34-48).

16. Regarding claim 21, Oosterling teaches routing the milk across a measuring chamber 15 surface (filter 9) , on which a film is formed (particles trapped in filter may be said to form a film and milk may be said to necessarily leave a film when it has passed over any surface, because of it's consistency); and capturing an image of the surface using camera 6.

17. Regarding claim 22, Oosterling removes the objects using the filter 9 and rinsing water. This mechanism is an extractor (col. 4, lines 1-14)

18. Regarding claims 23 and 24, Oosterling does not specifically teach determining the frequency of object detections to make quality determinations, but does teach measuring an amount of contaminants or objects detected, based on for instance the pressure difference across filter 9 (col. 3, lines 49-57). It would have been obvious to

determine a frequency, since in order to determine any meaningful measure of the quality of the milk based on the amount of contaminants captured from a flow of milk, one must know over what period of time the contaminants have been allowed to build up on the filter.

19. Regarding claim 36, it would have been obvious to one of ordinary skill in the art at the time of invention to have based the milk grade on objects detected and their sizes, as the FDA requires strict guidelines for grading that would not be met due to high particle counts.

20. Regarding claim 37, as the method of Oosterling is used for determining whether a particle is in the filter and identifying it, by detecting such a particle, it would in effect distinguish it from a defect and from being considered in the object recognition rule.

21. Claims 16 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oosterling et al. in view of Maier, Jr. (US 6,571,731).

22. Regarding claims 16 and 35, Oosterling does teach detecting object parameters based on light reflectivity (see Figure 1), but does not disclose detecting parameters through transmissive reading. Maier teaches a device and method for detecting particles and contaminants in a milk flow, with a filter, and wherein the objects are detected based on the loss of intensity of light radiation as it is transmitted through the filter (col. 3, lines 27-35). Note that the change in light intensity is a type of gradient based on transmission. It would have been obvious to one of ordinary skill in the art to combine the teachings of Maier with the method of Oosterling because the use of

transmitted light would allow more characteristics about what particles are on the filter to be determined and therefore would give more information about the level of contamination of the milk being tested.

Response to Arguments

23. Applicant's arguments filed 1 August 2011 have been fully considered but they are not persuasive.

24. Applicant has argued that the obviousness rejection of the claims over the Oosterling reference is improper because one of ordinary skill in the art would not have been motivated or have known how to distinguish between particles and non-particles, or between mineral particles and biological particles. However, it is maintained that one of ordinary skill in the art would have been able make these type of contaminate distinctions, and would have been motivated to do so.

25. Oosterling discloses capturing objects in a filter and then using some means to identify them, specifically some type of camera, such as a CCD camera. While Oosterling does specifically mention blood particle contaminates and milk flake contaminates, nowhere does Oosterling state or suggest that these are the only type of contaminates that can be identified. Oosterling uses these two common contaminate types as an example, but also suggests that other types of contaminates may be identified, such as when Oosterling states “the **contamination**, blood residues or flakes of milk have been formed... " (col. 2, lines 57-58, emphasis added), indicating that other types of “contamination” may be present and identifiable on the filter. One of ordinary

skill in the art would be familiar with filters that trap blood residue and flakes, and would know that these filters will trap many other types of particles as well, including all sorts of mineral and biological particles. Furthermore, one of ordinary skill in the art would be familiar with how to distinguish shapes of the different particles on the camera image of the filter, and would also know how to make other distinctions, such as color, reflectance, etc., that would appear on a camera image of the particles.

26. Examiner maintains that one of ordinary skill in the art would know how to make these distinctions because knowing the difference between the shapes (or colors, or reflectance) of different types of particles obvious, and it is even suggested by Oosterling in that the difference between blood residues and flakes are made this way. Furthermore, one of ordinary skill would be motivated to distinguish between any and all particles that can be seen on the camera image because it would allow for the better classification of the type of contamination, if any, that is present in the milk.

Conclusion

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL WEST whose telephone number is (571)272-2139. The examiner can normally be reached on Monday to Friday, 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HEZRON E WILLIAMS/
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